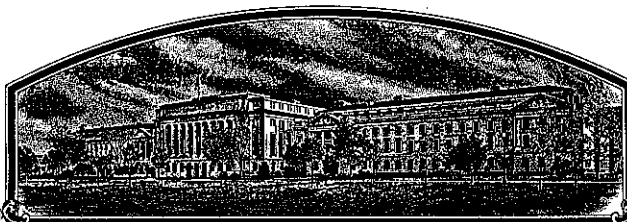


No.

9200279



# THE UNITED STATES OF AMERICA

**TO ALL TO WHOM THESE PRESENTS SHALL COME:**

*The Board of Regents of the  
University of Wisconsin System*  
**Whereas, THERE HAS BEEN PRESENTED TO THE**

**Secretary of Agriculture**

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

TRITICALE

'Enduro'

*In Testimony Whereof, I have hereunto set  
my hand and caused the seal of the Plant  
Variety Protection Office to be affixed  
at the City of Washington, D.C.  
this 31st day of October in  
the year of our Lord one thousand nine  
hundred and ninety-four.*

*Attest:*

*Kenneth A. Evans*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Mike Esny*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE  
(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Agrecol Corporation Patrick J. LeMahieu - Authorized		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. UW26	3. VARIETY NAME Enduro
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) 4906 Femrite Drive Madison, WI 53716		5. PHONE (include area code) 608-221-9568	<b>FOR OFFICIAL USE ONLY</b> PVPO NUMBER 9200279 Date Sept. 28, 1992 Time 12:46 <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M. Filing and Examination Fee: \$ 2150.- Date Sept. 25, 1992 Certificate Fee: \$ 250.00 Date Aug. 15, 1994
6. GENUS AND SPECIES NAME Triticosecale	7. FAMILY NAME (Botanical) Gramineae		
8. CROP KIND NAME (Common Name) Winter Triticale	9. DATE OF DETERMINATION September 24, 1991		
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

Patrick J. LeMahieu - President  
Agrecol Corporation  
4906 Femrite Drive  
Madison, WI 53716

PHONE (include area code): 608-221-9568

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

- a. ☒ Exhibit A, Origin and Breeding History of the Variety  
b. ☒ Exhibit B, Novelty Statement.  
c. ☒ Exhibit C, Objective Description of Variety.  
d. ☒ Exhibit D, Additional Description of Variety.  
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.  
f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office  
g. ☒ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

Enclosed with application

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)  
☒ YES (If "YES," answer items 16 and 17 below) ☒ NO (If "NO," skip to item 18 below) AAA 12 Oct 1994 per letters!

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?  
☒ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?

☒ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?

☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date: \_\_\_\_\_)  
☒ NO

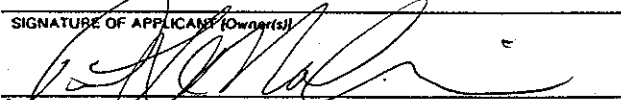
19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?

☐ YES (If "YES," give names of countries and dates)  
☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT (Owner(s)) 	CAPACITY OR TITLE President	DATE 9/23/92
SIGNATURE OF APPLICANT (Owner(s))	CAPACITY OR TITLE	DATE

**EXHIBIT A****ORIGIN AND BREEDING HISTORY OF THE VARIETY**

The initial source material from which Enduro was developed was a bulk population that was given to the Department of Agronomy, University of Wisconsin - Madison by Mr. Dean Bork, of Wausaukee, Wisconsin. Mr. Bork, who had been a neighbor to Dr. Frank Zillinsky, triticale breeder for CIMMYT in Mexico, received the F2 population from Dr. Zillinsky on November 1, 1975. Dean immediately planted the population in Jefferson County, Wisconsin. Despite the late planting date the breeding population developed to the 2-3 leaf stage before the ground froze, but only two plants from the entire population survived the winter.

Seed from the two surviving plants was seeded in plant rows in the fall of 1976, and seed that was harvested from each row was bulked and planted as a population in the fall of 1977. Head selections were made in 1978, and head rows were evaluated in 1979. Head rows were planted in Marinette County, Wisconsin in the fall of 1979 and were harvested in 1980. Seed from several rows were harvested and sent to the small grains breeding project at the University of Wisconsin for continued testing.

Seed from several head rows was planted in the fall of 1980 and evaluated during the following growing season. The head rows were sufficiently heterogeneous that spikes were re-selected, threshed and planted again in head rows in the fall of 1981. In 1982 a head row that looked promising was harvested and designated WB-UW26.

UW 26 was then evaluated in a preliminary yield trial at Madison, Wisconsin in 1983 and 1984 (Table 1). UW26 was planted in the four-replicate yield trials at Madison and Arlington, Wisconsin, in the fall of 1984 and performed well in 1985. It continued to perform well in evaluation nurseries at Madison and Arlington until a decision was made that UW26 was worthy of increase and release as a variety. It has been a stable, homogeneous line since it was first tested as a pure line in 1983. UW26 was named Enduro in the summer of 1992.

**EXHIBIT B****NOVELTY STATEMENT**

Enduro is an awned, tall winter triticale variety that was developed at the University of Wisconsin - Madison and released exclusively in 1991 to Agrecol, Inc., an ecological agriculture research company with headquarters in Madison, Wisconsin. Enduro was developed through pedigree breeding from a F2 population that originated from Dr. Frank Zillinsky's program at CIMMYT in Mexico.

Enduro was released because it produces higher grain yields and has better winter survival than Tritigold-22, a sister line to Enduro that was released by Mr. Dean Bork in the mid-1980's. Phenotypically, it most closely resembles Tritigold-22 and is distinct from most other winter triticale varieties grown in the Midwest because of its thick spikes. Varieties such as Wintri, Jenkins, Newcale, Trillium, Winterfest, Lasko and Largo have more slender spikes that do not appear to be as thick as spikes of Enduro. Enduro's thick spikes are attributable to a high percentage of vegetative material in the spike and are not attributable to plump kernels. In fact, grain of Enduro tends to be somewhat shriveled and wrinkled, and is not high in test weight.

When grown side-by-side, plots of Enduro and Tritigold-22 are rather difficult to distinguish phenotypically, unless the winter was severe enough to reduce the survival of winter crops. Under moderately severe to severe winter killing conditions, Enduro has noticeably better winter survival than Tritigold-22. Enduro has consistently produced higher grain yields than Tritigold-22, even when winter survival percentages were high. Enduro also has a lower percentage of leaf rust infection than Tritigold-22 when conditions favor rust development. Triticale-22 and Enduro head out at the same time, while Enduro tends to be about 1/2 to 1 inch taller at maturity. Agronomic performance characteristics of Enduro are presented in Tables 1 through 7 in section D of this application.

Enduro will be marketed as a forage winter triticale variety by Agrecol.

OBJECTIVE DESCRIPTION OF VARIETY  
TRITICALE

NAME OF APPLICANT(S) Agrecol Corporation	VARIETY NAME OR TEMPORARY DESIGNATION UW26 - Enduro
ADDRESS (Street and No., or F.F.D. No., City, State, and ZIP Code) 4906 Femrite Drive Madison, WI 53716	FOR OFFICIAL USE ONLY PVPO NUMBER 9200279

Place the appropriate number that describes the varietal character of this variety in the boxes below.  
Place a zero in first box (e.g.  or ) when number is either 99 or less or 9 or less.

## 1. GROWTH HABIT:

<input type="text" value="3"/>	1 = SPRING	2 = INTERMEDIATE	3 = WINTER	
<input type="text" value="2"/>	Juvenile Plant Growth:	1 = PROSTRATE	2 = SEMIPROSTRATE	3 = ERECT
<input type="text" value="2"/>	Photoperiod:	1 = INSENSITIVE	2 = SENSITIVE	

## 2. PLOIDY:

<input type="text" value="1"/>	1 = HEXAPLOID	2 = OCTOPLOID	3 = OTHER (Specify) _____
<input type="text" value="4"/> <input type="text" value="2"/>	2n CHROMOSOME NUMBER		

## 3. MATURITY (50% Flowering):

<input type="text" value="4"/>	1 = VERY EARLY	2 = EARLY	3 = MIDSEASON	4 = LATE	5 = VERY LATE	
<input type="text" value="0"/> <input type="text" value="1"/>	DAYS EARLIER THAN Jenkins.....		<input type="text"/>	1 = CARMACK	2 = ROSNER	3 = PATHFINDER
<input type="text" value="1"/> <input type="text" value="0"/>	DAYS LATER THAN Newcale.....		<input type="text"/>	4 = 6TA 204	5 = ARMADILLA	

## 4. HEIGHT:

<input type="text" value="1"/> <input type="text" value="1"/> <input type="text" value="7"/>	CM. HIGH	<input type="text" value="5"/>	1 = DWARF	2 = SEMIDWARF	3 = SHORT
<input type="text" value="1"/> <input type="text" value="1"/>	CM. SHORTER THAN Jenkins.....	<input type="text"/>	4 = MIDTHALL	5 = TALL	
<input type="text" value="0"/> <input type="text" value="5"/>	CM. TALLER THAN Wintri.....	<input type="text"/>	1 = CARMACK	2 = ROSNER	3 = PATHFINDER
			4 = 6TA 204	5 = ARAMADILLA	

## 5. PLANT COLOR AT BOOT STAGE:

<input type="text" value="3"/>	1 = YELLOW GREEN	2 = GREEN	3 = BLUE GREEN
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## 6. STEM:

<input type="text" value="1"/>	Anthocyanin:	1 = ABSENT	2 = PRESENT		
<input type="text" value="1"/>	Neck Hairiness:	1 = NONE	2 = SLIGHT	3 = MODERATE	4 = HEAVY
<input type="text" value="1"/>	Shape Of Neck:	1 = STRAIGHT	2 = WAVY	3 = OTHER (Specify) _____	

## 7. LEAVES:

<input type="text" value="2"/>	Flag Leaf:	1 = NOT TWISTED	2 = TWISTED	<input type="text" value="2"/> <input type="text" value="4"/>	CM. LEAF LENGTH: 1st Leaf Below Flag Leaf
<input type="text" value="2"/>	Waxy Bloom On Leaf At Boot:	1 = ABSENT	2 = PRESENT	<input type="text" value="1"/> <input type="text" value="7"/>	MM. LEAF WIDTH: 1st Leaf Below Flag Leaf
<input type="text" value="2"/>	Leaf Carriage:	1 = UPRIGHT	2 = RECURVED	<input type="text" value="1"/>	Auricle Color: 1 = COLORLESS OR WHITE
		3 = DROOPING			2 = PURPLE
					3 = OTHER (Specify) _____

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## 8. HEAD:

<input type="text" value="2"/>	Density:	1 = LAX	2 = MIDDENSE	3 = DENSE	
<input type="text" value="2"/>	Shape:	1 = FUSIFORM	2 = OBLONG	3 = CLAVATE	4 = ELLIPTICAL 5 = OTHER (Specify) _____
<input type="text" value="4"/>	Awedness:	1 = AWNLESS	2 = APICALLY AWNLETED	3 = AWNLETED	4 = AWNED
<input type="text" value="1"/>	Awn Color:	1 = WHITE	2 = YELLOW	3 = TAN	4 = BROWN 5 = BLACK
<input type="text" value="1"/>	<input type="text" value="0"/>	CM. HEAD LENGTH		<input type="text" value="1"/>	<input type="text" value="4"/> MM. HEAD WIDTH

## 9. GLUMES AT MATURITY:

<input type="text" value="2"/>	Pubescence:	1 = GLABROUS	2 = SLIGHTLY PUBESCENT	3 = PUBESCENT
<input type="text" value="1"/>	Color:	1 = WHITE	2 = YELLOW	3 = TAN 4 = BROWN 5 = BLACK
<input type="text" value="3"/>	Length:	1 = SHORT	2 = MIDLONG	3 = LONG
<input type="text" value="3"/>	Width:	1 = NARROW	2 = MIDWIDE	3 = WIDE
<input type="text" value="1"/>	Shoulder:	1 = WANTING	2 = OBLIQUE	3 = ROUNDED
<input type="text" value="3"/>	Beak:	1 = OBTUSE	2 = ACUTE	3 = ACUMINATE
		4 = SQUARE	5 = ELEVATED	6 = APICULATE

## 10. COLEOPTILE COLOR:

<input type="text" value="2"/>	1 = WHITE	2 = GREEN	3 = PURPLE
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## 11. SEED:

<input type="text" value="1"/>	Shape:	1 = OVATE	2 = OVAL	3 = ELLIPTICAL
<input type="text" value="3"/>	Smoothness:	1 = SMOOTH	2 = SLIGHTLY WRINKLED	3 = WRINKLED
<input type="text" value="2"/>	Brush Area:	1 = SMALL	2 = MIDSIZE	3 = LARGE
<input type="text" value="2"/>	Brush Length:	1 = SHORT	2 = MIDLONG	3 = LONG
<input type="text" value="1"/>	Phenol Reaction:	1 = IVORY	2 = FAWN	3 = LIGHT BROWN 4 = BROWN 5 = BROWN BLACK
<input type="text" value="2"/>	Color:	1 = WHITE	2 = AMBER	3 = RED 4 = PURPLE 5 = BLACK 6 = OTHER (Specify) _____
<input type="text" value="3"/>	<input type="text" value="8"/>	GMS. PER 1,000 SEED		

## 12. DISEASE (0 = Not Tested, 1 = Susceptible, 2 = Resistant, 3 = Tolerant):

<input type="text" value="3"/>	STEM RUST (Races) _____	<input type="text" value="3"/>	LEAF RUST (Races) _____
<input type="text" value="0"/>	STRIPE RUST (Race) _____	<input type="text" value="3"/>	ERGOT
<input type="text" value="3"/>	POWDERY MILDEW _____	<input type="text" value="0"/>	BACTERIAL STRIPE
<input type="text" value="0"/>	SEPTORIA	<input type="text" value="2"/>	YELLOW DWARF
<input type="text" value="1"/>	OTHER (Specify) _____	<input type="text" value="1"/>	OTHER (Specify) _____

## 13. INSECT (0 = Not Tested, 1 = Susceptible, 2 = Resistant, 3 = Tolerant):

## HESSIAN FLY RACE:

<input type="text" value="0"/>	GREENBUG	<input type="text" value="0"/>	GP	<input type="text" value="0"/>	A	<input type="text" value="0"/>	B	<input type="text" value="0"/>	C
<input type="text" value="0"/>	CEREAL LEAF BEETLE	<input type="text" value="0"/>	D	<input type="text" value="0"/>	E	<input type="text" value="0"/>	F	<input type="text" value="0"/>	G
<input type="text" value="1"/>	OTHER (Specify) _____								

## 14. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	VARIETY
PLANT TILLERING	Tritigold - 22
WINTER HARDINESS	Jenkins
AREA OF ADAPTATION	Tritigold - 22
SEED SHAPE	Tritigold - 22

## REFERENCES:

L. W. Briggie and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, USDA.

W. E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, Contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts.

## COMMENTS:

**EXHIBIT D****ADDITIONAL DESCRIPTION OF THE VARIETY**

Agrecol, Corporation, will soon release its first winter triticale. UW 26 will be released as 'Enduro'. Enduro was developed by the Wisconsin Agricultural Experiment Station and released exclusively to Agrecol.

Agrecol will produce seed of Enduro through a Seed Quality Assurance Program and will market Enduro as a forage winter triticale variety. The Seed Quality Assurance program will include a) use of certified Foundation Seed as planting stocks; b) field inspection; c) seed inspection and testing; d) inspection of seed conditioning plants and storage facilities; e) record keeping of seed production, conditioning, testing, and distribution; and f) seed lot growouts. Only one generation of seed production beyond Foundation Seed will be allowed.

Enduro is a hexaploid winter triticale developed from a cross made at CIMMYT in Mexico in 1974. It was first tested as a pure line in preliminary yield trials at the University of Wisconsin in 1983 and 1984 (Table 1), and thereafter was tested in advanced yield trials at Madison and Arlington, Wisconsin through 1990 (Tables 2, 3, 5, 6, and 7). It was also tested statewide in Wisconsin in 1988 (Table 4), and was entered in the 1988 and 1989 International Winter Hardy Triticale Performance Nursery. The International Nursery has testing locations in the United States, Canada, Poland, Sweden, Germany and the former Soviet Union.

Enduro (referred to as WB-UW26 in several of the tables) was considered a promising line throughout its testing in Wisconsin because it produced higher grain yields and had better winter survival than Tritigold-22, a sister line to Enduro. Enduro most closely resembles Tritigold-22 in appearance, thus it is compared to Tritigold-22 in most of the tables of performance data. It is also compared to one or more soft red winter wheat varieties in each of the tables because winter wheat is a much more common winter crop in Wisconsin and new crops should be compared to established crops to identify reference points for crop performance.

Because they are sister lines, Enduro and Tritigold-22 are phenotypically very similar. They are similar in heading date, test weight, and straw yield. Enduro is slightly taller than Tritigold-22 and has better tolerance to leaf rust and stem rust. The primary differences between the two varieties is that Enduro has had better winter survival in nurseries where winterkilling was prevalent, and Enduro has consistently produced higher grain yields than Tritigold-22 by 10 - 20%.



Throughout most of the 1980's the winter triticale evaluation nurseries at the University of Wisconsin were composed primarily of lines from the UW program. Commencing in 1988 additional varieties from other programs were included (Tables 5, 6, and 7). Enduro heads much later than Newcale, but heads 1 to 2 days earlier than Jenkins. It is slightly later than Wintri. Enduro is approximately 2 inches taller than Wintri, but is 4 - 5 inches shorter than Jenkins. It is considerably taller than Newcale. Enduro has much stiffer straw than Jenkins and Wintri when conditions favor lodging.

Enduro is an awned, white-glumed winter triticale variety. The awns are rough and are moderately long and white in color. Seeds are amber in color, ovate in shape, and wrinkled. Enduro has long, white glumes and an acuminate beak. It has sustained considerable pre harvest sprouting when rainfall during crop ripening has kept the spikes wet for considerable periods of time. Spikes of Enduro are mid-dense and are oblong in shape. Awn color is white.

Enduro appears to have good overall disease resistance. Most diseases of winter triticale in Wisconsin develop late in the season and rarely are a problem in winter triticale production. Most evaluation nurseries in Wisconsin had minimal disease pressures in the 1980's.

Table 1 - Performance of 12 winter triticales and Argee winter wheat at Madison, Wisconsin in 1983 and 1984

Genotype	Grain yield	Bushel weight in	Head date June	Plant height in
WB-UW4	2940	52.2	7.8	45.2
WB-UW5	3347	52.0	7.0	45.2
WB-UW10	3582	51.0	9.4	49.5
WB-UW11	3714	50.8	10.0	46.8
WB-UW14	3606	51.5	8.5	46.7
WB-UW23	3542	51.0	9.5	47.2
WB-UW24	3506	51.2	9.4	48.2
WB-UW25	3147	52.4	7.0	44.5
WB-UW26	4056	50.6	10.2	49.8
WB-13A(1)	3939	52.1	9.6	48.7
WB-13A(2)	3848	52.0	9.6	49.8
WB-14	3890	51.6	9.5	49.4
Argee(W WH)	3785	57.0	11.6	40.8

Table 2 - Performance of three winter triticales and three soft red winter wheats at Arlington and Madison, Wisconsin, 1985-88.

Variety or Selection	Grain yield lb/a	Bushel weight lb/bu	Straw yield t/a	Dry matter yield t/a	Survival %	Head date	Height in	Lodging %	Protein %	Leaf rust %
Loc-years	7	7	6	6	7	7	6	6	6	2
Winter Triticale										
Tritigold-22	3383	50.9	3.23	5.12	71	5/31	46.9	6	10.5	40
WB-UW24	3963	50.9	3.12	5.21	80	5/30	44.6	6	10.5	33
WB-UW26	4058	51.1	3.26	5.34	79	5/31	47.5	5	10.4	13
Winter Wheat										
Argee	3587	56.3	2.93	4.40	86	6/2	35.0	5	9.7	28
Caldwell	3589	57.1	2.23	4.18	68	5/26	33.6	4	9.8	18
Charmay	3516	55.8	3.24	5.13	79	6/2	38.4	6	10.2	2

Table 3 - Performance of four winter triticales and three winter wheats at Madison and Arlington, Wisconsin in 1987-89.

Genotype	Grain yield	Straw yield	Test wt	Surv	Head date	Height	Stem rust	Lodging	Protein
	lb/a	t/a	lb	%	June	in	%	%	%
Tritigold-22	3226	3.62	46.7	64	5.3	45.1	45	4	12.9
WB-UW11-1	3601	3.44	45.6	54	5.5	43.6	45	2	12.7
WB-UW24	3768	3.45	46.8	74	4.0	42.8	40	3	12.4
WB-UW26	3929	3.70	47.1	73	4.6	45.8	35	2	12.2
Argee (W Wh)	3253	3.62	52.4	90	5.0	36.8	30	3	11.9
Caldwell (W Wh)	3166	2.80	53.8	65	5/29.6	31.3	65	3	11.0
Charmany (W Wh)	2784	3.82	51.7	73	5.6	36.0	80	11	12.4
No. tests	4	2	4	3	4	4	1	2	3

Table 4 - Performance of three winter triticals in E.S. Oplinger trials, 1988.

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Entry	Grain yield	Test wt	Survival	Height	Lodging
	lb/a	lb/bu	%	in	0.2-9.0
Arlington					
Tritigold-22	2910	52.4	34	39.8	0.2
WB-UW24	2958	52.2	32	38.7	0.3
WB-UW26	3894	52.3	48	39.5	0.2
Mean	3252	52.3	48	39.5	0.2
Janesville					
Tritigold-22	1338	52.4	54	43.2	0.2
WB-UW24	2172	49.7	97	41.8	0.2
WB-UW26	2220	51.1	83	43.5	0.2
Mean	1908	51.1	83	43.5	0.2
Racine					
Tritigold-22	1242	51.4	96	44.3	0.2
WB-UW24	1032	52.4	87	41.0	0.2
WB-UW26	1446	53.3	97	44.8	0.2
Mean	1242	52.4	94	43.4	0.2
Chilton					
Tritigold-22	2046	49.2	92	36.7	0.2
WB-UW24	2352	48.5	89	36.8	0.2
WB-UW26	1446	48.4	98	37.5	0.2
Mean	2238	48.7	93	37.0	0.2
Means over 4 locations					
Tritigold-22	1884	51.4	69	41.0	0.2
WB-UW24	2130	50.7	76	39.6	0.2
WB-UW26	2466	51.3	93	42.0	0.2
Grand mean	2160	51.1	80	40.9	0.2

Table 5 - Performance of winter triticales and winter wheat checks at Arlington, Wisconsin in 1989.

Genotype	Grain yield	Test wt	Head date	Height	Stem rust	Lodging
	lb/a	lb/bu	June	in	%	%
Jenkins	2564	43.6	13.7	46.5	0	75
Newcale	2332	41.5	2.0	33.0	8	0
Tritigold-22	3458	42.1	14.0	42.0	45	4
Wintri	3312	40.7	11.7	40.0	50	0
Enduro	3318	42.2	12.3	42.0	35	0
Argee (W Wh)	2518	49.1	11.3	32.0	30	0
Caldwell (W Wh)	1774	50.0	4.0	29.0	65	0
Cardinal (W Wh)	1752	47.9	6.7	28.0	75	0
Charmany (W Wh)	1770	47.8	12.7	31.0	80	28

Table 6 - Performance of winter triticales and winter wheat checks at Arlington, Wisconsin in 1988-89.

Genotype	Grain yield	Test wt	Winter survival	Head date	Height	Stem rust	Lodging
	lb/a	lb	%	June	in	%	%
Jenkins	2127	46.9	28	7.0	46.5	0	75
Tritigold-22	2231	44.2	28	8.5	42.0	45	4
Wintri	2586	45.1	19	6.9	40.0	50	50
Enduro	3194	45.6	34	7.7	42.0	35	0
Argee (W Wh)	2364	49.3	80	6.6	32.0	30	0
Caldwell (W Wh)	1768	51.1	27	1.3	29.0	65	0
Cardinal (W Wh)	2071	50.7	38	2.9	28.0	75	0
Charmany (W Wh)	1855	49.0	38	7.4	31.0	80	28

Table 7 - Winter survival of winter triticale cultivars and winter wheat checks at Arlington, Wisconsin in 199

Variety	Winter survival percentage
Centennial	55
Jenkins	92
Newcale	69
Trillium	15
Tritigold-22	63
Winterfest	62
Wintri	96
Enduro	87
Argee (W Wh)	90
Caldwell (W Wh)	57
Cardinal (W Wh)	52
Dynasty (W Wh)	79
Merrimac (W Wh)	87

Nursery planted on September 18, 1989. Winter survival evaluated on April 14, 1990.



**EXHIBIT E****BASIS OF APPLICANT'S OWNERSHIP**

This is to certify that Mr. Patrick LeMahieu is the agent of the applicant. The applicant, Agrecol Corporation, is the sole owner of Enduro winter triticale. A Memorandum of Agreement and an Addendum to the Agreement are attached.

Sincerely,



Patrick J. LeMahieu  
President  
Agrecol Corporation  
4906 Femrite Drive  
Madison, WI 53716

MEMORANDUM OF AGREEMENT

9200279

AMONG

THE BOARD OF REGENTS OF THE  
UNIVERSITY OF WISCONSIN SYSTEM,  
R. A. FORSBERG, AND M. A. BRINKMAN

and

AGRECOL, THE AGRICULTURAL DEVELOPMENT DIVISION  
OF W. T. ROGERS COMPANY

FOR

THE DISTRIBUTION OF "UW-26" WINTER TRITICALE

THIS AGREEMENT, made this \_\_\_\_ day of \_\_\_\_\_, 1991, by and among the Board of Regents of the University of Wisconsin System on behalf of the Wisconsin Agricultural Experiment Station and Department of Agronomy of the University of Wisconsin-Madison ("UNIVERSITY"), and Robert A. Forsberg ("FORSBERG"), leader of the Small Grain Research and Breeding Project in the Department of AGRONOMY of the University of Wisconsin-Madison, and Marshall Brinkman ("BRINKMAN"), and Agrecol, the Agricultural Development Division of W. T. Rogers Company ("AGRECOL"); and,

WHEREAS, winter triticale UW-26 ("TRITICALE UW-26") was developed by FORSBERG and BRINKMAN; and,

WHEREAS, the UNIVERSITY, FORSBERG and BRINKMAN desire the distribution of TRITICALE UW-26; and

WHEREAS, FORSBERG and BRINKMAN do assign and set over unto the UNIVERSITY such right, title, and interest in and to TRITICALE UW-26 as is necessary for the UNIVERSITY to enter into this Agreement; and

WHEREAS, the UNIVERSITY has determined that TRITICALE UW-26 should be available for public purchase and that the collaboration contemplated by this Agreement between the parties is of mutual interest and benefit; and

NOW, THEREFORE, in consideration of the promises and the faithful performance of the covenants herein contained, it is AGREED:

1. That FORSBERG and BRINKMAN do assign and set over unto the UNIVERSITY such right, title, and interest in and to TRITICALE UW-26 as is necessary for the UNIVERSITY to enter into this Agreement.
2. The UNIVERSITY and AGRECOL will collaborate to:
  - A. Develop an effective system of delivering TRITICALE UW-26 to consumers, both domestic and foreign, according to the highest quality specifications, including, by way of example, varietal purity and identification, seed quality, packaging, and labeling and in keeping with the policies of the UNIVERSITY.
  - B. Generate research revenues for sustained research, germplasm enhancement, cultivar development, and continued development of new technologies of importance to researchers, producers, processors, and other consumers.

- C. Ensure proper acknowledgment of the efforts and achievements of the College of Agricultural and Life Sciences of the UNIVERSITY and its researchers.
3. A. UNIVERSITY does hereby exclusively license AGRECOL, under its rights in TRITICALE UW-26 and under any Plant Variety Protection Certificate which may be obtained on TRITICALE UW-26, to produce, dispense, and sell Certified Seed of TRITICALE UW-26 in the United States and any foreign country.  
B. Only breeder, foundation, and certified classes of seed will be recognized.  
C. AGRECOL will purchase, as needed, all Foundation Seedstocks from the UNIVERSITY Foundation Seed Program.
4. A. Marketing:  
AGRECOL will arrange seed production and marketing programs either internally, or externally via contract, and will keep the production and programs in place as long as TRITICALE UW-26 remains biologically superior in performance and economically competitive in the market place.  
B. TRITICALE UW-26 will be sold only as Certified Seed and by variety name in the U.S. and equivalent standards in applicable foreign countries.  
C. AGRECOL may state that TRITICALE UW-26 was developed at the University of Wisconsin-Madison. However, AGRECOL may not use the name or logos of the UNIVERSITY in any other way and shall not explicitly or implicitly imply or state that this Agreement constitutes an endorsement of AGRECOL by the UNIVERSITY.
5. A. AGRECOL will pay the UNIVERSITY an amount equal to 2.5% of the per-bushel selling price for each bushel of Certified Seed of TRITICALE UW-26 sold. Such payment will be made on an annual basis by Dec. 31st to be used for support of the Small Grain Research and Breeding Project in AGRONOMY.  
B. Each year, on or before January 1, AGRECOL shall submit to the UNIVERSITY and to the leader of the Small Grain Research and Breeding Project a full and accurate report of the annual production and marketing of TRITICALE UW-26 and will submit such additional reports as the UNIVERSITY reasonably requests.
6. AGRECOL will prepare the application document and pay the filing fees for any Plant Variety Protection (P.V.P.) application filed on TRITICALE UW-26.
7. THE UNIVERSITY MAKES NO WARRANTY OF ANY KIND AS TO THE CONDITION, OWNERSHIP, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OF TRITICALE UW-26. AGRECOL shall hold harmless the UNIVERSITY, FORSBERG, and BRINKMAN against any claim for injuries resulting from the use of TRITICALE UW-26.

8. In the event that a third party should, in the opinion of AGRECOL, infringe a P.V.P. Certificate on TRITICALE UW-26, AGRECOL shall give written notice of such infringement to the UNIVERSITY. If the UNIVERSITY shall not itself institute an enforcement action to enjoin such infringements within sixty (60) days, then AGRECOL is granted the right to bring such action in the name of the UNIVERSITY, at the expense of AGRECOL, with AGRECOL retaining any damages or fees recovered, and with AGRECOL generally informing the UNIVERSITY about the status and progress of any such action brought.
9. Should either party breach its obligations under this agreement, the aggrieved party shall give written notice of breach to the other party. If the breach is not cured within thirty (30) days of receipt of the notice of breach, the aggrieved party may then terminate this agreement upon thirty (30) days written notice. In the event of such termination, AGRECOL shall cease sale of TRITICALE UW-26 and will destroy or sell at fair market value any remaining stock to the UNIVERSITY.
10. This Agreement may be terminated without cause by the UNIVERSITY or AGRECOL upon written notice given on or before July 31st, effective two years from the date of the notice. In the event of termination of this Agreement, AGRECOL shall cease sale of TRITICALE UW-26 as of the date of termination and will destroy or sell at fair market value any remaining stock to the UNIVERSITY.
11. This agreement constitutes the entire understanding between the UNIVERSITY and AGRECOL and shall be construed, interpreted and applied in accordance with the laws of the State of Wisconsin.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their duly authorized representatives effective as of the day and year first written above.

BOARD OF REGENTS OF THE UNIVERSITY OF WISCONSIN SYSTEM  
FOR THE WISCONSIN AGRICULTURAL EXPERIMENT STATION, THE DEPARTMENT OF  
AGRONOMY, AND ROBERT A. FORSBERG OF THE UNIVERSITY OF WISCONSIN-MADISON

By: *Robert W. Erickson*  
Robert W. Erickson  
Director, Research Administration-Financial

AGRECOL  
By: *Patrick J. LeMahieu*  
Patrick J. LeMahieu  
Print Name

*Director of Operations*  
Print Title

*Robert A. Forsberg*  
R. A. Forsberg

*Marshall A. Brinkman*  
M. A. Brinkman

ADDENDUM TO THE  
MEMORANDUM OF AGREEMENT AMONG  
THE BOARD OF REGENTS OF THE  
UNIVERSITY OF WISCONSIN SYSTEM,  
R. A. FORSBERG, AND M.A. BRINKMAN  
AND  
AGRECOL  
FOR  
THE DISTRIBUTION OF "UW-26" WINTER TRITICALE

1. Seed produced through a Seed Quality Assurance Program, coordinated by Agrecol, can be marketed for forage crop production. The Seed Quality Assurance Program will include a) use of certified Foundation Seed as planting stocks; b) field inspection; c) seed inspection and testing; d) inspection of seed conditioning plants and storage spaces; e) record keeping of seed production, conditioning, testing, and distribution; and f) post-control seed lot growouts. Only one generation of seed production beyond Foundation Seed will be allowed.
2. Agrecol will pay the University an amount equal to 2.5% of the selling price for all seed sold one generation after Foundation Seed.

By: Robert W. Erickson Date: 9-24-91  
Robert W. Erickson  
Director, Research Administration-Financial

## AGRECOL

By: Patrick J. DeMahieu Date: 9/10/91  
Patrick J. DeMahieu  
Director of Operations

Robert A. Forsberg Date: 9/6/91  
R. A. Forsberg

Marshall A. Brinkman Date: 9/5/91  
M. A. Brinkman

Neal A. Jorgensen Date: 9/23/91  
Neal A. Jorgensen  
Acting Dean, College of Agriculture and Life Sciences  
University of Wisconsin-Madison